

Algebra 2

2 Numbers and Functions

2.1 Operations With Numbers [p. 86]

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State the property that is illustrated in each statement. All variables represent real numbers.

38. $v(3t) = (3t)v$

39. $(25x)y = 25(xy)$

40. $4x + 13y = 13y + 4x$

41. $2.3 + x = x + 2.3$

42. $(2 + 3) + 5 = 2 + (3 + 5)$

43. $(3 + a) + b = 3 + (a + b)$

44. $x\left(\frac{1}{x}\right) = 1$, where $x \neq 0$

45. $\frac{x}{3} \cdot \frac{3}{x} = 1$, where $x \neq 0$

46. $-7 + 7 = 0$

47. $0 = 2x + (-2x)$

48. $1 \cdot (3x) = 3x$

49. $63 \cdot 1 = 63$

50. $-5x + 0 = -5x$

51. $x + y = 0 + x + y$

52. $m(x^2 + x) = mx^2 + mx$

53. $2(3 - y) = 2 \cdot 3 - 2y$

54. $4yw = 4wy$

55. $5(127) = 127(5)$

Evaluate each expression by using the order of operations.

56. $3 \cdot 2^2 + 3$

57. $6 \div 3 \cdot 2$

58. $2^2(2 + 3) + 5$

59. $6 \div (3 - 1) \cdot 5$

60. $-3 \cdot 5^2 + 16$

61. $5(2 - 3)^2$

62. $(3 - 2) + (5 - 4) - 2$

63. $30 - 3 \times 2 + 6 \div 3$

64. $16 \div 2 \times 6 - 1$

65. $(2^2 + 1) + 4 \div 2$

66. $6 \div 3 - (10 - 3^2)$

67. $2^{(3-1)} + (3 - 1)$

68. $3 \cdot 4 - 2^{(4-1)}$

69. $\frac{8-2}{3} + (2 + 1)$

70. $2 \cdot 4 + \frac{14}{5+2}$

71. Complete the following investigation:

- Count the number of items in your home that display numbers.
- What types of numbers are represented?
- Name two examples of integers and two examples of rational numbers that you found.

CHALLENGE

CONNECTION

72. Can a number be both rational and irrational? Explain your reasoning.

73. **STATISTICS** While trying to find the average of 8, 10, 14, and 16, Ron entered 8 $\boxed{+}$ 10 $\boxed{+}$ 14 $\boxed{+}$ 16 $\boxed{\div}$ 4 $\boxed{=}$ into a calculator and got 36 for an answer.

- Did Ron get the correct average of 8, 10, 14, and 16? Explain.
- What keystrokes should Ron have used?

74. **CULTURAL CONNECTION: ASIA** Ancient Babylonians used rational numbers as approximations of irrational numbers. For example, the Babylonians knew that the diagonal of a square was $\sqrt{2}$ times the length of a side. For the value of $\sqrt{2}$, the Babylonians used 1.4142. They thought this value was close enough for their